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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,830	05/16/2002	Arthur S. Goldman	13249	6259

25103 7590 11/04/2005

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EXAMINER

BUTLER, PATRICK

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,830

Applicant(s)

GOLDMAN ET AL.

Examiner

Patrick Butler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-10, 12-16 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) 9, 10, 13 and 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 12, 14, 15, and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02 September 2005 has been entered.

Response to Amendment

The Applicant's Amendments and Accompanying Remarks, filed 02 September 2005, have been entered and have been carefully considered. Claims 22-25 are new, Claims 1, 12, 14, and 21 are amended, Claims 7, 11, and 17 are canceled, and Claims 1-6, 8, 9, 12-16, and 21-25 are pending.

In view of Applicant's canceling claim 11, the Examiner withdraws the previously set forth objection as detailed in the Claim Objections section of the Office Action dated 29 April 2005.

Despite these advances, the invention as currently claimed is not found to be patentable for reasons herein below. Due to amendments to the claims and new claims, modification of the prior art rejections was necessitated.

Claim Rejections - 35 USC § 112/35 U.S.C. § 101

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 25 is directed to a method for making a window frame component, it is dependent on Claim 21, which is directed to making a window frame. Due to the conflict of Claim 25 with the claim it is dependent on, it is indefinite. Proper correction is required.

Claim 25 provides for the use of the product made as a component in a window frame, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 25 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,643,857 (Cousin et al.) in view of U.S. Patent No. 5,922,255 (McLeod).

Note: The suggested use of the method to make a window frame as mentioned in the preamble is treated as an intended use only as there are no steps in the method similar installing glass. Therefore, the recitation "window frame" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claims 1-5

Cousin et al. teach a method of forming a racket frame including forming an elongate element (a preformed thermoplastic polymer extrusion; providing said preformed thermoplastic polymer extrusion) by extruding a mixture of a thermoplastic material and carbon fibers; allowing the elongate element to cool and solidify; introducing (filling) a polyurethane foam (polymer foam; polyisocyanate-based; polyurethane foam; said polyurethane foam is rigid closed-cell foam, semi-rigid closed-cell/open-cell foam or flexible open-cell foam; a support foam formed within said cavity) into cavities (at least one cavity) in the elongate element; heating the elongate element with the polyurethane foam therein to its softening temperature (a first temperature; said first temperature is the heat deflection temperature of the preformed polymer extrusion)

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by immersing the elongate element in a thermostat-controlled bath for example of silicone oil; bending the softened elongate element (said heated extrusion) as it is internally supported to prevent crushing by the polyurethane foam around a core (on a curved mandrill) to form a racket frame; and cooling the racket frame (extrusion) below its softening temperature (a second temperature) to set it into the shape of the racket frame (a curved polymer extrusion) (abstract; column 3, line 65 - column 4, line 2; column 4, line 42 - column 5, line 2; column 5, lines 63-66). Note that, although Cousin et al. do not specifically teach that the polymer foam is cured within the cavities, one of ordinary skill in the art would have obviously recognized that the urethane foam must obviously be cured to be capable of supporting the elongate element to prevent crushing. Note further that, although Cousin et al. do not specifically teach that the racket frame is removed from the core after cooling, one of ordinary skill in the art would have obviously recognized that the racket frame must obviously be removed from the core to allow the formed racket to serve its intended purpose.

Cousin et al. do not specifically teach that the polyurethane foam has a density of about 16 kg per cubic meter to about 320 kg per cubic meter. However, Cousin et al. further teach the cavities are filled with a polyurethane foam whose density is chosen in dependence on the final weight the racket is to have (column 3, line 65 - column 4, line 2). Particularly, the density of the foam is manipulated to achieve the target weight and desired characteristics (see col. 6, lines 10-19). The examiner does not find any limitation to only having 0.9 (specific gravity) density; The density of the racket is not limited to any particular example Assuming arguendo that 0.9 is the target average

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density and that non-foam portion of the racket frame is made of polymers with 1.1 specific gravity, then the foam would necessarily have less than the target average density in order for the frame to attain the target average density. As the space provided for the foam is variable based on space occupied by the polymer frame of the racket, then instances where a majority of the frame is occupied by non-foam polymer would require that the foam dramatically lower its density in order to achieve the target average density. Given this interaction of the variables and Cousin's teachings of density manipulation for the foam, one of ordinary skill in the art would have liberal latitude to optimize the foam density. Since Cousin et al. recognize that the density of the foam is chosen based upon the desired weight of the racket, Cousin et al. recognize that the density of the foam is a result-effective. As such, one of ordinary skill in the art would have obviously determined the optimum density of the foam in the process of Cousin et al. through routine experimentation based upon the desired final weight of the racket, the racket construction, etc.

Cousin et al. do not specifically teach that the thermoplastic material may include a vinyl polymer. However, McLeod teaches a method of manufacturing a racket frame including molding a racket frame out of a fiber reinforced thermoplastic resin material including long fibers and a flowable thermoplastic matrix material such as polyvinyl chloride (vinyl polymer) (column 4, line 36-50). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use polyvinyl chloride as the thermoplastic matrix

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material for the carbon fibers in the process of Cousin et al. as taught by McLeod to provide a racket frame made from a low-cost yet strong material as taught by McLeod.

Claims 6, 8, 14, 15, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,643,857 (Cousin et al.) in view of U.S. Patent No. 5,922,255 (McLeod) and U.S. Patent No. 4,525,319 (Kaspe).

Claim 6

The discussion of Cousin et al. and McLeod as applied to claim 1 above applies herein.

Cousin et al. do not specifically teach that the second temperature is at least about 10 degrees Celsius less than the heat deflection temperature (e.g., the softening temperature) of the elongate element. However, Kaspe teaches a method for forming a single flange pipe adapter including softening the end portion of a resin pipe, bending the outer extremities of the heated end portion to cause the heated end portion to be flared outwardly, and cooling the outwardly flared end portion to set it in its final configuration wherein the temperature and the timing of the heating and cooling vary depending on the nature and/or thickness of the thermoplastic resin used (column 1, line 47 - column 2, line 2; column 3, lines 33-39 and 48-61). Although Kaspe does not teach the specifically claimed cooling temperature, Kaspe obviously recognizes that the temperature and the timing of heating and cooling are result-effective variable based upon the nature of the thermoplastic resin used in bending processes for thermoplastic materials. As such, in view of the teachings of Kaspe, one of ordinary skill in the art would have obviously determined the optimum temperature and timing of heating and

cooling in the process of Cousin et al. in view of McLeod through routine experimentation based upon the composition, thickness and nature of the thermoplastic material used for the racket frame.

Claim 8

The discussion of Cousin et al. and McLeod as applied to claim 1 above applies herein.

Although Cousin et al. teach that the elongate element can be heated by a bath of desired temperature, Cousin et al. do not specifically teach that the bath may be a glycol bath. Kaspe further teach that heating in a glycol bath or other baths such as oil baths have been suitable for heating the end portion of the pipe (said extrusion is heated to said first temperature in a glycol bath). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a glycol bath in the process of Cousin et al. in view of McLeod instead of the silicone oil bath as taught by Kaspe to provide a cheaper and more efficient heating medium for the bath in the process of Cousin et al. in view of McLeod.

Claim 14

Cousin et al. teach a method of forming a racket frame including forming an elongate element (a preformed extrusion; providing said preformed extrusion) by extruding a mixture of a thermoplastic material and carbon fibers; allowing the elongate element to cool and solidify; introducing (filling) a polyurethane foam into cavities (at least one cavity) in the elongate element; heating the elongate element with the

polyurethane foam therein to its softening temperature by immersing the elongate element in a thermostat-controlled bath for example of silicone oil; bending the softened elongate element (heated extrusion) as it is internally supported to prevent crushing by the polyurethane foam around a core (on a curved mandrill) to form a racket frame; and cooling the racket frame (extrusion) below its softening temperature to set it into the shape of the racket frame (a curved polymer extrusion) (abstract; column 3, line 65 - column 4, line 2; column 4, line 42 - column 5, line 2; column 5, lines 63-66). Note that, although Cousin et al. do not specifically teach that the urethane foam is cured within the cavities, one of ordinary skill in the art would have obviously recognized that the urethane foam must obviously be cured to be capable of supporting the elongate element to prevent crushing. Note further that, although Cousin et al. do not specifically teach that the racket frame is removed from the core after cooling, one of ordinary skill in the art would have obviously recognized that the racket frame must obviously be removed from the core to allow the formed racket to serve its intended purpose.

Cousin et al. do not specifically teach that the preformed extrusion may include vinyl polymer thermoplastic. However, McLeod teaches a method of manufacturing a racket frame including molding a racket frame out of a fiber reinforced thermoplastic resin material including long fibers and a flowable thermoplastic matrix material such as polyvinyl chloride (vinyl polymer thermoplastic) (column 4, line 36-50). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use polyvinyl chloride as the thermoplastic matrix material for the carbon fibers in the process of Cousin et al. as

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taught by McLeod to provide a racket frame made from a low-cost yet strong material as taught by McLeod.

Cousin et al. in view of McLeod do not specifically teach that heating the extrusion to about 70 degrees Celsius and cooling the extrusion to a temperature less than about 60 degrees Celsius. However, Kaspe teaches a method for forming a single flange pipe adapter including softening the end portion of a resin pipe, bending the outer extremities of the heated end portion to cause the heated end portion to be flared outwardly, and cooling the outwardly flared end portion to set it in its final configuration wherein the temperature and the timing of the heating and cooling vary depending on the nature and/or thickness of the thermoplastic resin used (column 1, line 47 - column 2, line 2; column 3, lines 33-39 and 48-61). Although Kaspe does not teach the specifically claimed heating and cooling temperatures, Kaspe obviously recognizes that the temperature and the timing of heating and cooling are result-effective variable based upon the nature of the thermoplastic resin used in bending processes for thermoplastic materials. As such, in view of the teachings of Kaspe, one of ordinary skill in the art would have obviously determined the optimum temperature and timing of heating and cooling in the process of Cousin et al. in view of McLeod through routine experimentation based upon the composition, thickness and nature of the vinyl polymer used for the racket frame.

Claim 15

The discussion of Cousin et al., Kaspe and McLeod as applied to claim 14 above applies herein.

Although Cousin et al. in view of McLeod teach that the elongate element can be heated by a bath of desired temperature, Cousin et al. in view of McLeod do not specifically teach that the bath may be a glycol bath. Kaspe further teach that heating in a glycol bath or other baths such as oil baths have been suitable for heating the end portion of the pipe (said extrusion is heated to said first temperature in a glycol bath). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a glycol bath in the process of Cousin et al. in view of McLeod instead of the silicone oil bath as taught by Kaspe to provide a cheaper and more efficient heating medium for the bath in the process of Cousin et al. in view of McLeod.

Claim 21

Cousin et al. teach a method of forming a racket frame including forming an elongate element (a preformed thermoplastic polymer extrusion; providing said preformed thermoplastic polymer extrusion) by extruding a mixture of a thermoplastic material and carbon fibers; allowing the elongate element to cool and solidify; introducing (filling) a polyurethane foam (polymer foam; polyisocyanate-based; polyurethane foam; said polyurethane foam is rigid closed-cell foam, semi-rigid closed-cell/open-cell foam or flexible open-cell foam; a support foam formed within said cavity) into cavities (at least one cavity) in the elongate element; heating the elongate element with the polyurethane foam therein to its softening temperature (a first temperature; said first temperature is the heat deflection temperature of the preformed polymer extrusion) by immersing the elongate element in a thermostat-controlled bath for example of

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silicone oil; bending the softened elongate element (said heated extrusion) as it is internally supported to prevent crushing by the polyurethane foam around a core (on a curved mandrill) to form a racket frame; and cooling the racket frame (extrusion) below its softening temperature (a second temperature) to set it into the shape of the racket frame (a curved polymer extrusion) (abstract; column 3, line 65 - column 4, line 2; column 4, line 42 - column 5, line 2; column 5, lines 63-66). Note that, although Cousin et al. do not specifically teach that the polymer foam is cured within the cavities, one of ordinary skill in the art would have obviously recognized that the urethane foam must obviously be cured to be capable of supporting the elongate element to prevent crushing. Note further that, although Cousin et al. do not specifically teach that the racket frame is removed from the core after cooling, one of ordinary skill in the art would have obviously recognized that the racket frame must obviously be removed from the core to allow the formed racket to serve its intended purpose.

Cousin et al. do not specifically teach that the polyurethane foam has a density of about 16 kg per cubic meter to about 320 kg per cubic meter. However, Cousin et al. further teach the cavities are filled with a polyurethane foam whose density is chosen in dependence on the final weight the racket is to have (column 3, line 65 - column 4, line 2). Particularly, the density of the foam is manipulated to achieve the target weight and desired characteristics (see col. 6, lines 10-19). The examiner does not find any limitation to only having 0.9 (specific gravity) density; The density of the racket is not limited to any particular example. Assuming arguendo that 0.9 is the target average density and that non-foam portion of the racket frame is made of polymers with 1.1

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specific gravity, then the foam would necessarily have less than the target average density in order for the frame to attain the target average density. As the space provided for the foam is variable based on space occupied by the polymer frame of the racket, then instances where a majority of the frame is occupied by non-foam polymer would require that the foam dramatically lower its density in order to achieve the target average density. Given this interaction of the variables and Cousin's teachings of density manipulation for the foam, one of ordinary skill in the art would have liberal latitude to optimize the foam density. Since Cousin et al. recognize that the density of the foam is chosen based upon the desired weight of the racket, Cousin et al. recognize that the density of the foam is a result-effective. As such, one of ordinary skill in the art would have obviously determined the optimum density of the foam in the process of Cousin et al. through routine experimentation based upon the desired final weight of the racket, the racket construction, etc.

Cousin et al. do not specifically teach that the thermoplastic material may include a vinyl polymer. However, McLeod teaches a method of manufacturing a racket frame including molding a racket frame out of a fiber reinforced thermoplastic resin material including long fibers and a flowable thermoplastic matrix material such as polyvinyl chloride (vinyl polymer) (column 4, line 36-50). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use polyvinyl chloride as the thermoplastic matrix material for the carbon fibers in the process of Cousin et al. as taught by McLeod to provide a racket frame made from a low-cost yet strong material as taught by McLeod.

Cousin et al. do not specifically teach that the second temperature is at least about 10 degrees Celsius less than the heat deflection temperature (e.g., the softening temperature) of the elongate element. However, Kaspe teaches a method for forming a single flange pipe adapter including softening the end portion of a resin pipe, bending the outer extremities of the heated end portion to cause the heated end portion to be flared outwardly, and cooling the outwardly flared end portion to set it in its final configuration wherein the temperature and the timing of the heating and cooling vary depending on the nature and/or thickness of the thermoplastic resin used (column 1, line 47 - column 2, line 2; column 3, lines 33-39 and 48-61). Although Kaspe does not teach the specifically claimed cooling temperature, Kaspe obviously recognizes that the temperature and the timing of heating and cooling are result-effective variable based upon the nature of the thermoplastic resin used in bending processes for thermoplastic materials. As such, in view of the teachings of Kaspe, one of ordinary skill in the art would have obviously determined the optimum temperature and timing of heating and cooling in the process of Cousin et al. in view of McLeod through routine experimentation based upon the composition, thickness and nature of the thermoplastic material used for the racket frame.

Claim 22

The discussion of Cousin et al., Kaspe and McLeod as applied to claim 21 above applies herein.

With respect to Claim 22, Cousin teaches that the foam prevents crushing of the elongate element (comprises selecting ingredients of said support foam to substantially

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stabilize said extrusion) (see col. 4, lines 1-7). Moreover, having selected the proper ingredients for the foam to have the ability to substantially stabilize said elongate element is inherent in Cousin principally because Cousin's elongate element prevents crushing, which is substantially stabilizing for the element.

Claim 23

The discussion of Cousin et al., Kaspe and McLeod as applied to claim 21 above applies herein.

With respect to Claim 23, Cousin teaches that the elongate element is heated within a liquid (see Fig. 7) before bending (see Fig. 8). Given that the middle of the structure has surface area on four sides, its heat dissipation within the air after removal from the liquid would necessarily be less than the ends of the structure, which have the same surface area on four sides plus the surface area of end of the elongate element. With the heat dissipation greater at the ends than in the middle, the middle would have a temperature gradient such that the middle would be warmer than the ends, particularly during the initial portions of bending the elongate element. Since the elongate element is taught to be bent in a fashion shown in Figure 8, the greatest flex would be the middle of the elongate element, which translates into the middle undergoing greater stress. Thus the limitations of the heating generating a temperature gradient which is warmer in the middle and warmer where greatest stress occurs.

Claim 24

The discussion of Cousin et al., Kaspe and McLeod as applied to claim 21 above applies herein.

With respect to Claim 24, Cousin teaches that the elongate element is bent into an arch shape (see shape of top of structure in Fig. 8).

Claim 25

The discussion of Cousin et al., Kaspe and McLeod as applied to claim 21 above applies herein.

With respect to Claim 25, as previously stated, The suggested use of the method to make a window frame as mentioned in the preamble is treated as an intended use only as there are no steps in the method similar installing glass. Therefore, the recitation "window frame" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Therefore, as the examiner finds no teachings within the references indicating the frame failing to be able to be used as to frame windows, much less merely as a component within a larger overall assembly in which the frame would be a part of.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,643,857 (Cousin et al.) in view of U.S. Patent No. 5,922,255 (McLeod) and U.S. Patent No. 5,164,419 (Bartlett et al.).

Claim 12

The discussion of Cousin et al. and McLeod as applied to claim 1 above applies herein.

Although Cousin et al. in view of McLeod teach filling the cavities by injection of a polyurethane foam from a mixing head, Cousin et al. in view of McLeod do not specifically teach that the polyurethane foam comprises polyisocyanate, at least one active hydrogen-containing compound, and a blowing agent. However, Bartlett et al. teach that it is well known to prepare polyurethane foams by reacting organic polyisocyanate with an active hydrogen-containing compound in the presence of a blowing agent or agents (a plurality of ingredients comprising polyisocyanate, at least one active hydrogen-containing compound and a blowing agent) (column 2, lines 30-46). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the well known process of preparing a polyurethane foam in the process of Cousin et al. in view of McLeod as taught by Bartlett et al. to provide a reliable and readily available method of forming the polyurethane foam in the process of Cousin et al. in view of McLeod.

Response to Arguments

The Applicant's Amendments and Accompanying Remarks, filed 02 September 2005, have been entered and have been carefully considered but they are not persuasive.

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Applicant argues with respect to the 35 USC 103(a) rejections. Applicant's arguments appear to be on the grounds that:

- 1) A prima facie case of obviousness was not made because hindsight reconstruction was used to pick and choose among disclosures in the prior art.
- 2) The references used teach away from their combination.
- 3) The density parameter is not met by the references.
- 4) The foam is not rigid closed-cell foam, semi-rigid closed-cell/open cell foam or flexible open cell foam as taught by Cousin and McLeod.
- 5) The combination of Cousin and McLeod is objective and challenged by applicant.
- 6) Cousin and McLeod teach away from one another because of their different modes of making the elongated element: extruding versus injection molding.
- 7) Cousin and Kaspe teach away from each other because Kaspe does not raise the temperature to the softening temperature.

The Applicant's arguments are addressed as follows:

1 and 5) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

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reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The Examiner submits that it is well known that PVC is both inexpensive and strong as evidenced by Cheremisinoff (Materials Selection Deskbook, pages 104-114). Cheremisinoff compares the strength of different thermoplastics and demonstrates that PVC has 55 N/mm² tensile strength, greater than PE, PP, ABS, and PTFE, and is a tough, low cost material. Additional evidence of its strength is the reference to its wide use in applications requiring strength: pipes, rods, and pipe fittings (See Cheremisinoff, page 111, Table 3.42; page 114, § 3.16.3, paragraphs 1-3).

2 and 6) In response to applicant's argument that the references teach away from each other because they use different elongated element forming techniques, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). As such, the material of McLeod is being used and incorporated, not the method of shaping the material as suggested by Applicant.

3) Cousin et al. do not specifically teach that the polyurethane foam has a density of about 16 kg per cubic meter to about 320 kg per cubic meter. However, Cousin et al. further teach the cavities are filled with a polyurethane foam whose density is chosen in dependence on the final weight the racket is to have (column 3, line 65 - column 4, line

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2). Particularly, the density of the foam is manipulated to achieve the target weight and desired characteristics (see col. 6, lines 10-19). The examiner does not find any limitation to only having 0.9 (specific gravity) density; The density of the racket is not limited to any particular example. Assuming *arguendo* that 0.9 is the target average density and that non-foam portion of the racket frame is made of polymers with 1.1 specific gravity, then the foam would necessarily have less than the target average density in order for the frame to attain the target average density. As the space provided for the foam is variable based on space occupied by the polymer frame of the racket, then instances where a majority of the frame is occupied by non-foam polymer would require that the foam dramatically lower its density in order to achieve the target average density. Given this interaction of the variables and Cousin's teachings of density manipulation for the foam, one of ordinary skill in the art would have liberal latitude to optimize the foam density. Since Cousin et al. recognize that the density of the foam is chosen based upon the desired weight of the racket, Cousin et al. recognize that the density of the foam is a result-effective. As such, one of ordinary skill in the art would have obviously determined the optimum density of the foam in the process of Cousin et al. through routine experimentation based upon the desired final weight of the racket, the racket construction, etc.

4) Since rigid foam is generally closed cell foam, the rigid foam as taught by Cousin would be closed cell. Moreover, since the foam would necessarily be either open or closed cell in the method described by Cousin, the limitations of the foam as claimed by Applicant in Claim 4 are met.

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7) It appears that the sections of Kaspe that Applicant is referring to in regards to heating to a temperature below the softening temperature , col. 1, lines 29-35 and 59-61; col. 4, lines 2-7, are sections that describe the stress relieving steps subsequent to the softening step (see col. 1, lines 42-43; col. 3, lines 62-69). The step relied upon for combining with Cousin and McLeod is the step of softening and shaping, not the step of stress relieving.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is 571-272-8517. The examiner can normally be reached on Monday through Friday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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